Reconsideration of this application as amended is respectfully requested.

In the Office Action, claims 1-23 were pending and rejected. Portions of the specification were objected.

In this response, no claim has been canceled. Claims 7-8 have been cancelled without prejudice. Claims 1, 14-16, and 22-23 have been amended to particularly point out and distinctly claim, in full, clear, concise, and exact terms, the subject matter which Applicant regards as his invention. Portions of the specification have been amended. No new matter has been added.

Portions of the specification were objected. In view of the foregoing amendments, it is respectfully submitted that the objection has been overcome. Formal drawings will be submitted when the present application is in condition of allowance.

Claims 1, 15, 22, and 23 are objected to because of informalities. In view of the foregoing amendments, it is respectfully submitted that the objection has been overcome.

Claims 1-23 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. In view of the foregoing amendments, it is respectfully submitted that the rejection has been overcome.

Specifically, claim 23 has been amended to be directed to a machine-readable storage medium having computer instructions stored therein, which is a patentable subject matter.

In addition, it is respectfully submitted that the present invention as claimed is related to using genetic programming techniques to derive a design structure that has a new feature not included in a prior reference structure, where the derived designed structure can then be used to design a tangible design structure such as an electronic circuit.

Applicant respectfully submits that the claims are fully disclosed in the specification and result in a physical transformation outside the computer which is practical in the technological arts. Specifically, independent claim 1 includes limitations of comparing each candidate with a reference structure to obtain dissimilarity information and determining a fitness value of each candidate based on the compliance of the candidate and the dissimilarity of the candidate with the reference structure. One or more new candidate entities are selected based on their respective fitness values.

For example, independent claim 1 defines distinctive operations to generate a new entity based on the fitness including the compliance with the predetermined design requirement and the dissimilarity of the reference structure. The method involves physical manipulation of a data structure and an architecture of a physical object used to solve the problem. Applicant submits that independent claim 1 as amended clearly sets forth definite operations, as a whole, to achieve a new and useful, concrete, and tangible result. If independent claim 1 could not satisfy the requirements of 35 U.S.C. §101, none of the computer implemented process (e.g., computer-aid-design or CAD software) claims in U.S. would satisfy the requirements of 35 U.S.C. §101. Therefore, for the reasons discussed above, the present invention as claimed satisfies the statutory requirements of 35 U.S.C. §101.

Claims 1-23 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicant respectfully disagrees. The claimed limitations are fully supported by the specification of the present application, such as, for example, Figures 1A-1B; pages 88-95 of the present application.

Regarding the term of "invokable", it is respectfully submitted that one with ordinary skill in the art would understand the term of "invokable" is interpreted as "capable of being

invoked". The term of "invoke" is interchangeable in software industry as "calling a subroutine or function".

With respect to the term of "architecture-altering operations", these terms are well known in the art and are supported throughout the specification, such as, for example, pages 8-10 of the present applications.

With respect to the term of "syntactic structure", such a term has been defined throughout the specification, such as, for example, page 16 of the present application.

Claims 1-23 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-23 are rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. In view of the foregoing amendments, it is respectfully submitted that the rejections have been overcome.

Claims 1-23 are rejected under 35 U.S.C. §103(a), as being unpatentable over applicant's admitted prior arts (APA) by Koza et al, (US 5,867,397, herein after Koza '397 patent) and in view of another APA (Ullman, J. R.).

In view of the foregoing amendments, it is respectfully submitted that the present invention as claimed includes limitations that are not disclosed by the cited references. Specifically, for example, independent claim 1 recites as follows:

> 1. A computer-implemented process for creating an entity that satisfies a
> predetermined design requirement that at least one characteristic is not in a reference
> structure, the process comprising:
>   initializing a plurality of candidate entities and an iteration count with a
>   predetermined value; and
>   performing iterative operations via one or more genetic programming
>   operations, each iterative operation including
>   <u>comparing each of the plurality of candidate entities with the reference</u>
>   <u>structure to obtain an isomorphism value for each candidate</u>

entity, the isomorphism value representing a dissimilarity between the respective candidate entity and the reference structure,

determining a fitness value for each of the candidate entities based on a compliance with the predetermined design requirement and the isomorphism value of the respective candidate entity,

selecting at least one candidate entity from the plurality of candidate entities that has a fitness value exceeds a predetermined threshold,

creating at least one new candidate entity by creating a variation in the selected at least one candidate entity, if the selected at least one candidate does not satisfy the predetermined design requirement or a number of iterative operations has not reached the predetermined value of the iteration count, wherein the at least one new candidate is used as one of the candidate entities for a next iteration, and

terminating the iterative operations if the selected at least one candidate satisfies the predetermined design requirement or a number of iterative operations has reached the predetermined value of the iteration count, wherein at least one of the selected candidate entities is used to design an end-result structure in view of the predetermined design requirement.

(Emphasis added)

Independent claim 1 includes performing iterative operations using genetic programming techniques to create and fine tune a structure that satisfies a predetermined design requirement and at the same time avoids certain features of an existing reference structure. The iteration operations are performed by looping through multiple runs. During each run, several new entities are created based on a variation of a selected entity of a previous run (e.g., previous loop), until a new entity satisfies the predetermined design requirement or a number of loops reaches a predetermined threshold. The evaluation of each entity in each loop is based on an isomorphism value associated with each entity to represent dissimilarity between the respective entity and the reference entity. It is respectfully submitted that these limitations are absent from the cited references.

Although the Office Action acknowledges that the Koza '397 patent fails to disclose creating a new entity that avoids certain features of a prior art; however, the Office Action contended that it is obvious to one with ordinary skill in the art (see e.g., 12/10/2007 Office Action, pages 10-11).

Applicant respectfully disagrees. Although the Koza '397 patent discloses certain techniques for designing structures using genetic programming; however, the Koza '397 patent fails to disclose or suggest the limitations set forth above, particularly, using genetic programming techniques to fine tune a structure to both satisfy a predetermined design requirement and avoid certain limitations of a preexisting structure.

There is no disclosure or suggestion within the Koza '397 patent regarding the limitations as claimed in the present application. Thus, one with ordinary skill in the art, based on the teachings of the Koza '397 patent, would not be able to conceive the limitations as claimed in the present application. The Office Action's obviousness assertion can only be based on impermissible Applicant's own disclosure.

Further, as acknowledged by the Office Action, the Koza '397 patent fails to disclose using an isomorphism value associated with each entity to represent dissimilarity between the respective entity and the reference entity; nevertheless, the Office Action, contended that it would be obvious since such terms are used in the Ullman reference, where the Ullman reference is discussed within the specification of the present application.

Applicant respectfully disagrees. Although the Ullman reference discloses a method using an isomorphism value; however, the Ullman reference does not disclose or suggest such a method can be used in genetic programming to design an entity structure. Specifically, there is no disclosure or suggestion within the Koza '397 patent and the Ullman reference to combine with each other. Another word, one with ordinary skill in the art, based on the

teachings of the Koza '397 patent and the Ullman reference, would not combine these two references. It appears that the Office Action can only combine these two references based on the specification of the present application (e.g., based on the impermissible hindsight of Applicant's own disclosure). See, for example, 12/10/2007 Office Action, pages 10-11.

The Office Action further cited KSR International Co. vs. Teleflex Inc., stating that the "[i]t is merely applying known technique to known method", (see e.g., 12/10/2007 Office Action, page 11). Applicant respectfully disagrees.

Nothing in KSR ruling prevents combining existing known techniques to generate new and novel techniques. After all, every invention or new techniques are derived from existing techniques. KSR only prevents an <u>obvious</u> combination of existing techniques to generate a new technique, which is not the case herein.

Clearly, the Office Action fails to establish a prima facie case to combine the Koza '397 patent with the Ullman reference, because there is absolutely nothing within both references to suggest a combination of both references. The Office Action can only assert such an obvious combination <u>only based on the disclosure of Applicant's own disclosure</u> (see e.g., 12/10/2007 Office Action page 11). Therefore, it is respectfully submitted that, without Applicant's own disclosure, it is not obvious to one with ordinary skill in the art to combine these two references.

Even if the Koza '397 patent were combined with the Ullman reference, such a combination still lacks the limitations set forth above, particularly, using an isomorphism value to represent dissimilarity between two entities during iterative operations using genetic programming techniques. Again, any suggestion for combining the Koza '397 patent and the Ullman reference can only be found based on the impermissible hindsight of Applicant's own

disclosure. Therefore, for reasons set forth above, it is respectfully submitted that the present invention as claimed is patentable over the Koza '397 patent and the Ullman reference.

Claims 1-23 are rejected under 35 U.S.C. §102(b) as being anticipated by Koza et al ("Genetic Programming as a Darwinian Invention Machine" Euro-GP, May 26-27, 1999, herein after the Koza paper). Although the Office Action acknowledged that the Koza paper is part of Applicant's own work; nevertheless, the Office Action maintained that it still qualifies as 102(b) reference since there is no confidential agreement (see e.g., 12/10/2007 Office Action, pages 12-13). Applicant respectfully disagrees.

It is respectfully submitted that although the Koza paper was submitted on February 19, 1999, it was not published until May 26, 1999, less than a year prior to the priority date of the present application. It is well known that, prior to publishing a paper in the Euro-GP Workshop, each paper must be reviewed under confidentiality by the certain reviewers of the workshop. This is further supported by an email dated January 15, 1999 communicated between a reviewer and Applicant enclosed herein.

Specifically, on page 4 of the email, a reviewer stated:

- I have not discussed my review of this paper with any other peer reviewer for this conference.
- I will regard any new intellectual content of this paper as confidential and will not disclose or use it until such time as it gets published under the author's name or otherwise becomes publicly known (and, if I discussed this review with anyone else at all, they have also explicitly agreed to maintain the author's work as confidential and I notified the program chairs of their agreement to do so).

Thus, in order to review a paper to be published in the workshop, a reviewer has to agree at least the terms set forth above. Therefore, the Koza paper does not qualify as prior art against the present invention as claimed. Withdrawal of the rejections is respectfully requested.

In view of the foregoing, Applicant respectfully submits the present application is now in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call/email the undersigned attorney.

Please charge Deposit Account No. 02-2666 for any shortage of fees in connection with this response.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

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